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CLAIMS

1. A device for detection of magnetic permeability μ or, alternatively, relative magnetic permeability μ_r or, alternatively, relative magnetic susceptibility $(\mu_r - 1)$ of a sample, characterised in that it contains a sample chamber and at least two coils, said two coils surrounding said sample chamber and said sample chamber having at least one opening for introduction of a sample or a sample container holding a sample, said device also provided with an electronic circuit which measures the difference in inductance between the two coils.

2. A device as claimed in claim 1, characterised in that each of said coils, when filled with air, has an inductance in the range of 0.01 to 100 μH .

3. A device as claimed in claim 1 or 2, characterised in that said sample chamber has a chamber volume in the range of 0.1 to 5000 μl .

4. A device as claimed in any one of claims 1-3, characterised in that one of the coils is placed so as to be in thermal contact by being physically connected to the material which constitutes the sample chamber, but without surrounding the cavity of the sample chamber.

5. A device as claimed in any one of claims 1-4, characterised in that the material of which the sample chamber is made is a polymer, such as Delrin, POM, polyvinyl chloride, Teflon, polyamide, polyacetal, polyethylene, polycarbonate, polystyrene, polypropylene, wood, glass, or a metal with $0.999 < \mu_r < 1.001$.

6. A device as claimed in any one of claims 1-5, characterised in that it is provided with an electronic circuit whose output signal is proportional to the difference in inductance between said coils and to the relative magnetic permeability of the sample material

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placed in one of the coils, which is in the range of
 $0.0000001 < \mu_r < 10$.

7. A device as claimed in claim 6, characterised in that said electronic circuit is formed
5 such that said coils are part of an alternating current bridge.

8. Use of the device as claimed in any one of claims 1-7, by interaction with magnetic markers, for detection of chemical substances with $\mu_r = 1$, exemplified by
10 proteins, hormones, complement factors, bacteria, cells, viruses, fungi, yeast, spores, phages, cells, cell organelles, DNA, RNA.